

Table of flood stages during March 1934—Continued

| River and station                 | Flood stage | Above flood stages—<br>dates |         | Crest |         |
|-----------------------------------|-------------|------------------------------|---------|-------|---------|
|                                   |             | From—                        | To—     | Stage | Date    |
| MISSISSIPPI SYSTEM                |             |                              |         |       |         |
| Ohio Basin                        |             |                              |         |       |         |
| Allegheny:                        | Feet        |                              |         | Feet  |         |
| Parkers Landing, Pa.              | 18          | 5                            | 5       | 24.4  |         |
| Lock No. 5, Schenley, Pa.         | 24          | 6                            | 6       | 28.0  |         |
| Lock No. 4, Natrona, Pa.          | 24          | 6                            | 6       | 25.9  |         |
| Monongahela:                      |             |                              |         |       |         |
| Lock No. 15, Houlst, W. Va.       | 22          | 3                            | 3       | 22.0  |         |
| Lock No. 7, Greensboro, Pa.       | 30          | 4                            | 4       | 30.3  |         |
| Guyandot: Logan, W. Va.           | 20          | 3                            | 3       | 20.8  |         |
| Levisa Fork: Pikeville, Ky.       | 35          | 3                            | 3       | 35.0  |         |
| North Fork: Jackson, Ky.          | 24          | 3                            | 5       | 35.5  |         |
| Barren: Bowling Green, Ky.        | 20          | Feb. 27                      | Feb. 28 | 22.5  | Feb. 27 |
| Green:                            |             | 4                            | 6       | 23.3  |         |
| Lock No. 6, Brownsville, Ky.      | 28          | 4                            | 8       | 32.1  |         |
| Lock No. 4, Woodbury, Ky.         | 33          | Feb. 28                      | 12      | 40.2  |         |
| Lock No. 2, Rumsey, Ky.           | 34          | 5                            | 16      | 37.8  |         |
| West Fork:                        |             |                              |         |       |         |
| Anderson, Ind.                    | 8           | 27                           | 29      | 9.6   |         |
| Edwardsport, Ind.                 | 12          | 29                           | 1       | 14.4  |         |
| New: New River, Tenn.             | 18          | 3                            | 3       | 20.8  |         |
| Cumberland:                       |             |                              |         |       |         |
| Williamsburg, Ky.                 | 19          | 4                            | 4       | 21.8  |         |
| Burnside, Ky.                     | 50          | 4                            | 4       | 51.4  |         |
| Celina, Tenn.                     | 28          | Feb. 27                      | 12      | 42.3  |         |
| Carthage, Tenn.                   | 40          | 21                           | 30      | 37.2  |         |
| Nashville, Tenn.                  | 40          | 4                            | 7       | 44.1  |         |
| Clarksville, Tenn.                | 46          | 27                           | 28      | 41.7  |         |
| Lock F, Eddyville, Ky.            | 50          | 4                            | 11      | 43.7  |         |
| North Fork: Mendota, Va.          | 8           | 26                           | 31      | 42.3  |         |
| Pigeon: Newport, Tenn.            | 6           | 3                            | 13      | 49.2  |         |
| French Broad:                     |             |                              |         |       |         |
| Ashville, N. C.                   | 4           | 29                           | 1       | 46.8  |         |
| Dandridge, Tenn.                  | 12          | 6                            | 17      | 57.1  |         |
| Little Tennessee: McGhee, Tenn.   | 18          | 28                           | 4       | 54.0  |         |
| Clinch: Clinton, Tenn.            | 25          | 3                            | 4       | 10.0  |         |
| Hiwassee: Charleston, Tenn.       | 22          | 3                            | 5       | 9.5   |         |
| Elk: Fayetteville, Tenn.          | 14          | 2                            | 6       | 24.8  |         |
| Duck: Columbia, Tenn.             | 30          | 24                           | 28      | 22.3  |         |
| Tennessee:                        |             |                              |         |       |         |
| Chattanooga, Tenn.                | 30          | 25                           | 27      | 35.1  |         |
| Bridgeport, Ala.                  | 18          | 5                            | 7       | 34.1  |         |
| Widows Bar Dam, Ala. (lower gage) | 26          | 4                            | 9       | 24.1  |         |
| Guntersville, Ala.                | 25          | 26                           | 29      | 20.0  |         |
| Decatur, Ala.                     | 20          | 4                            | 11      | 33.3  |         |
| Florence, Ala.                    | 18          | 27                           | 31      | 28.7  |         |
| Riverton Lock, Ala.               | 33          | 3                            | 13      | 32.0  |         |
|                                   |             | 27                           | Apr. 1  | 28.1  |         |
|                                   |             | 3                            | 10      | 30.8  |         |
|                                   |             | 7                            | 11      | 29.2  |         |
|                                   |             | 10                           | 11      | 20.0  |         |
|                                   |             | 11                           | 11      | 21.5  |         |
|                                   |             | 13                           | 13      | 41.8  |         |
|                                   |             | 27                           | Apr. 1  | 35.9  |         |

Table of flood stages during March 1934—Continued

| River and station                   | Flood stage | Above flood stages—<br>dates |                  | Crest        |         |
|-------------------------------------|-------------|------------------------------|------------------|--------------|---------|
|                                     |             | From—                        | To—              | Stage        | Date    |
| MISSISSIPPI SYSTEM—continued        |             |                              |                  |              |         |
| Ohio Basin—Continued                |             |                              |                  |              |         |
| Tennessee—Continued.                | <i>Feet</i> |                              |                  | <i>Feet</i>  |         |
| Savannah, Tenn. ....                | 39          | 6                            | 12               | 40.8         | 8, 9    |
| Johnsonville, Tenn. ....            | 31          | 8                            | 13               | 31.5         | 9-11    |
| Ohio:                               |             |                              |                  |              |         |
| Pittsburgh, Pa. ....                | 25          | 6                            | 6                | 25.8         | 6       |
| Point Pleasant, W. Va. ....         | 40          | 7                            | 7                | 40.0         | 7       |
| Dam No. 47, Newberg, Ind. ....      | 35          | 9                            | 16               | 38.2         | 13      |
| Evansville, Ind. ....               | 35          | 10                           | 16               | 38.5         | 13, 14  |
| Dam No. 48. ....                    | 35          | 12                           | 15               | 36.7         | 14      |
| Dam No. 50. ....                    | 32          | 10                           | 18               | 36.3         | 15      |
| Dam No. 52. ....                    | 35          | 10                           | 18               | 39.0         | 15      |
| Dam No. 53. ....                    | 38          | 11                           | 18               | 41.4         | 15, 16  |
| Cairo, Ill. ....                    | 40          | 13                           | 17               | 41.2         | 16      |
| White Basin                         |             |                              |                  |              |         |
| Black: Black Rock, Ark. ....        | 14          | 27                           | 31               | 19.3         | 27      |
| White:                              |             |                              |                  |              |         |
| Georgetown, Ark. ....               | 21          | 28                           | ( <sup>1</sup> ) | 24.5         | 31      |
| Clarendon, Ark. ....                | 26          | 30                           | ( <sup>1</sup> ) | 29.8         | Apr. 7  |
| Arkansas Basin                      |             |                              |                  |              |         |
| Petit Jean: Danville, Ark. ....     | 20          | 26                           | 29               | 22.8         | 27      |
| Red Basin                           |             |                              |                  |              |         |
| Ouachita:                           |             |                              |                  |              |         |
| Arkadelphia, Ark. ....              | 12          | 27                           | 28               | 19.3         | 27      |
| Camden, Ark. ....                   | 26          | { 5<br>28                    | 8<br>Apr. 4      | 28.2<br>33.3 | 6<br>31 |
| Sulphur:                            |             |                              |                  |              |         |
| Ringo Crossing, Tex. ....           | 20          | 2                            | 6                | 24.0         | 3       |
| Naples, Tex. ....                   | 22          | { 5<br>29                    | 13<br>Apr. 2     | 25.4<br>24.8 | 7<br>30 |
| Lower Mississippi Basin             |             |                              |                  |              |         |
| Big Lake Outlet: Manila, Ark. ....  | 10          | 27                           | ( <sup>1</sup> ) |              |         |
| St. Francis: Fisk, Mo. ....         | 20          | 29                           | 30               | 20.8         | 29      |
| Tallahatchie: Swan Lake, Miss. .... | 24          | 8                            | 29               | 27.7         | 14-16   |
| Atchafalaya Basin                   |             |                              |                  |              |         |
| Atchafalaya: Atchafalaya, La. ....  | 22          | 25                           | 28               | 22.0         | 25-28   |
| WEST GULF OF MEXICO DRAINAGE        |             |                              |                  |              |         |
| Sabine:                             |             |                              |                  |              |         |
| Logansport, La. ....                | 25          | 3                            | 13               | 28.4         | 8       |
| Bon Wier, Tex. ....                 | 21          | 29                           | 31               | 21.4         | 30, 31  |
| Trinity:                            |             |                              |                  |              |         |
| Dallas, Tex. ....                   | 28          | 2                            | 3                | 29.6         | 3       |
| Liberty, Tex. ....                  | 25          | 4                            | 12               | 27.5         | 7       |

<sup>1</sup> Flood continued into April.

## WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, Willis E. Hurd, temporarily in charge]

## NORTH ATLANTIC OCEAN

By HERBERT C. HUNTER

*Atmospheric pressure.*—The mean pressure during March 1934 was above normal over most of the North Atlantic, particularly from the vicinity of the North American coast between the Gulf of St. Lawrence and Cape Hatteras eastward to the Iberian Peninsula. However, the northeastern portion of the ocean had average pressure lower than normal, with greatest deficiency around the British Isles and thence northwestward to Iceland.

The lowest reading at any of the selected shore stations was 28.47 inches on the 1st, at Reykjavik, Iceland. Readings a very little lower comparatively near to the southwestern tip of Ireland were reported as occurring during the morning of the 17th by three vessels, the lowest of them being 28.40 inches by the American steamship *Steel Age*, in latitude 50°15' N., longitude 13°22' W.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, March 1934

| Station                   | Average pressure | Departure   | Highest       | Date | Lowest        | Date   |
|---------------------------|------------------|-------------|---------------|------|---------------|--------|
|                           | <i>Inches</i>    | <i>Inch</i> | <i>Inches</i> |      | <i>Inches</i> |        |
| Julianehaab, Greenland    | 29.45            | —           | 30.42         | 29   | 28.63         | 20     |
| Reykjavik, Iceland        | 29.49            | —0.19       | 30.11         | 31   | 28.47         | 1      |
| Lerwick, Shetland Islands | 29.56            | — .14       | 30.21         | 25   | 28.72         | 17     |
| Valencia, Ireland         | 29.68            | — .22       | 30.40         | 27   | 28.64         | 17     |
| Lisbon, Portugal          | 30.03            | + .03       | 30.39         | 4    | 29.50         | 31     |
| Madeira                   | 30.12            | + .11       | 30.40         | 16   | 29.74         | 31     |
| Horta, Azores             | 30.34            | + .16       | 30.58         | 22   | 29.91         | 31     |
| Belle Isle, Newfoundland  | 29.93            | + .13       | 30.46         | 25   | 29.26         | 7      |
| Halifax, Nova Scotia      | 30.15            | + .19       | 30.90         | 31   | 29.68         | 6, 7   |
| Nantucket                 | 30.14            | + .16       | 30.75         | 1    | 29.58         | 5      |
| Hatteras                  | 30.16            | + .12       | 30.64         | 1    | 29.46         | 20     |
| Bermuda                   | 30.20            | + .06       | 30.48         | 1    | 29.64         | 21     |
| Turks Island              | 30.05            | + .03       | 30.18         | 1    | 29.96         | 15, 20 |
| Key West                  | 30.08            | + .03       | 30.30         | 12   | 29.87         | 10     |
| New Orleans               | 30.13            | + .09       | 30.35         | 12   | 29.82         | 4      |
| Cape Gracias, Nicaragua   | 29.95            | + .02       | 30.00         | 7, 8 | 29.90         | 24, 25 |

NOTE.—All data based on a.m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

*Cyclones and gales.*—The reports at hand indicate that Atlantic gales were not so numerous as usual during March. This had been the case also during February, but the 2 months were in marked contrast as to the regions where intense winds were most frequently encountered; for the February gales occurred mainly between the forty-fifth meridian and the North American coast, while the March gales were met chiefly to eastward of the fortieth meridian. Substantially all the important gales of the North Atlantic during this month occurred within the 13-day period, 8th to 20th.

Strong gales were encountered on the 8th or 9th by many different vessels near the chief steamship lanes between the sixtieth and the fifteenth meridians. Two vessels on the 9th met gales of hurricane force to westward of mid-Atlantic waters; the German steamship *Berlin*, when about 200 miles south of Cape Race, and the Swedish motorship *Blankaholm*, when located at about one third of the way from Newfoundland to Ireland. (See chart VIII.)

Several centers of low pressure were connected with the gales of the 8th and 9th, but by the 11th a deep low was approaching the western coast of Ireland whence it advanced slowly eastward during the next 2 days (charts IX to XI.)

Pressure continued unusually low over the British Isles and two distinct lows from the region of Greenland traveled southeastward, the earlier about the 12th–14th, the later on the 15th and 16th, and coalesced with the chief low. Reports of whole gale force and storm force were numerous from the waters around the British Isles and to westward as far as midocean. Two more occurrences of hurricane force have come to hand, the first from the Norwegian motorship *Noreg*, which noted lowest pressure when in the English Channel on the 14th, but met greatest force of wind many miles to westward approximately 60 hours later. About the same time the British steamship *Minnie de Larrinaga* similarly recorded hurricane force, when 300 miles to southwestward of Ireland; this gale of the 17th was the final report of hurricane force in the Atlantic during March, though pressure continued decidedly low in the region of the British Isles until the 20th.

There was little storminess between the 21st and the 24th, but scattered occurrences during the final week of March may be noted. The most important was a gale of force 11 at a late hour of the 29th, at a location about midway between Newfoundland and France. Almost on the Tropic of Cancer two vessels noted easterly winds of force 8, one of them east of the Bahamas and north of Haiti, the other northeast of the Yucatan Channel.

*Fog.*—Normally there is an increase in the amount of fog as spring sets in over the North Atlantic. In March 1934 the increase was marked; fog was noted in most of the 5° squares on more days than the average for the month. There were, however, a few regions from which fog was apparently absent, though usually looked for; these were chiefly limited areas adjacent to Scotland and Ireland, a belt extending from the Iberian Peninsula to the waters around the Azores, and regions not far north and northwest of Bermuda.

In the Gulf of Mexico fog was less frequent than usual, as a rule; but the waters near Galveston Bay, Sabine Pass, and the southwestern coast of Louisiana had approximately the normal occurrence.

Near Chesapeake Bay fog was particularly frequent, being reported on 12 days, including all save 2 days after the 22d. The square which is indicated as next after this in prevalence is that between 40° and 45° north, and 45° and 50° west, where 11 days were noted as having fog. Here and in other squares of the Grand Banks area fog was encountered largely during three periods, centering about the 6th, 12th, and 22d, respectively.

From Cape Hatteras to the vicinity of Nova Scotia fog was notably dense about the 3d and 4th; marked delay to steamship service resulted, and 1 grounding and 2 collisions, none especially disastrous, were reported from the waters of New York Harbor. There was great delay of traffic in Long Island Sound, where ice combined with fog to hamper vessel movements. Another collision occurred in Delaware River and two in Chesapeake Bay, without serious havoc; but in the vicinity of Sable Island the British steamship *Concordia* sank on the afternoon of the 5th as the result of collision during heavy fog with the American steamer *Black Eagle*, no loss of life ensuing.

## OCEAN GALES AND STORMS, MARCH 1934

| Vessel                  | Voyage           |                | Position at time of lowest barometer |           | Gale began | Time of lowest barom-eter | Gale ended | Low-est bar-om-eter | Direc-tion of wind when gale began | Direction and force of wind at time of lowest barometer | Direction of wind when gale ended | Direction and high-est force of wind | Shifts of wind near time of lowest barom-eter |
|-------------------------|------------------|----------------|--------------------------------------|-----------|------------|---------------------------|------------|---------------------|------------------------------------|---|-----------------------------------|--------------------------------------|---|
|                         | From—            | To—            | Latitude                             | Longitude |            |                           |            |                     |                                    |   |                                   |                                      |   |
| NORTH ATLANTIC OCEAN    |                  |                |                                      |           |            |                           |            |                     |                                    |   |                                   |                                      |   |
| Blankaholm, Swed. M. S. | Finland.....     | New port News. | 53 13 N.                             | 13 40 W.  | Mar. 5     | 8a, Mar. 5                | Mar. 5     | Inches 29.02        | WSW..                              | WSW, 9..  | WNW.                              | WSW, 9..                             | WSW-W.  |
| Sylvafield, Br. M.S.    | Newcastle.....   | Philadelphia   | 58 16 N.                             | 14 32 W.  | Mar. 3     | 11a, 5.....               | do.....    | 28.88               | W.....                             | WNW, 8..  | NW.....                           | WNW, 10.                             | WSW-NW.                                       |
| Boston City, Br. S.S.   | England.....     | Boston.....    | 45 10 N.                             | 44 55 W.  | Mar. 8     | 11p, 7.....               | Mar. 8     | 29.55               | WSW.....                           | W, 6.....   | W.....                            | W, 9.....                            | W-WSW-W.                                      |
| Blankaholm, Swed. M. S. | Finland.....     | New port News. | 53 19 N.                             | 34 30 W.  | do.....    | 4p, 8.....                | Mar. 9     | 29.00               | N.....                             | N, 6.....   | NW.....                           | NW, 9.....                           | None.   |
| Sylvafield, Br.M.S.     | Newcastle.....   | Philadelphia   | 53 38 N.                             | 28 58 W.  | do.....    | Mdt. 8.....               | do.....    | 28.62               | W.....                             | NW, 8.....  | NNW.....                          | NW, 10.....                          | W-NW-NNW.                                     |
| City of Omaha, Am.S.S.  | Limhamn, Sweden. | Mobile.....    | 45 12 N.                             | 17 00 W.  | Mar. 9     | 4a, 9.....                | Mar. 12    | 29.66               | SSW.....                           | SSW, 8.....   | N.....                            | NW, 11.....                          | SSW-W.  |
| Berlin, Ger. S.S.       | Cobh.....        | Halifax.....   | 43 13 N.                             | 53 05 W.  | do.....    | 7a, 9.....                | Mar. 9     | 29.49               | SSW.....                           | SSW, 10.....  | W.....                            | W, 12.....                           |   |
| Blankaholm, Swed. M. S. | Finland.....     | New port News. | 50 22 N.                             | 39 45 W.  | do.....    | 11p, 9.....               | Mar. 11    | 29.02               | S.....                             | SSW, 11.....  | WNW.....                          | SW, 12.....                          | S-W.  |
| Paris, Fr. S.S.         | Havre.....       | New York.....  | 47 30 N.                             | 33 00 W.  | Mar. 10    | 7a, 10.....               | do.....    | 29.39               | WSW.....                           | WSW, 10.....  | WNW.....                          | WSW, 10.....                         | None.   |
| Skagerrak, Ger. M.S.    | Harburg.....     | do.....        | 41 02 N.                             | 66 14 W.  | do.....    | 6a, 11.....               | do.....    | 29.47               | ENE.....                           | NNE, 9.....   | N.....                            | ENE, 10.....                         | ENE-NNE-N.                                    |
| Europa, Ger.S.S.        | English Channel  | do.....        | 48 59 N.                             | 15 00 W.  | Mar. 11    | 4p, 11.....               | Mar. 12    | 28.98               | WNW.....                           | WNW, 7.....   | NW.....                           | NW, 11.....                          | None.   |
| Leerdam, Du.S.S.        | New York.....    | Rotterdam..... | 48 20 N.                             | 23 57 W.  | Mar. 9     | 10p, 11.....              | do.....    | 29.39               | SW.....                            | WNW, 11.....  | NW.....                           | WNW, 11.....                         | Do.   |
| Grete, Ger.S.S.         | Savannah.....    | Bremen.....    | 47 24 N.                             | 27 00 W.  | do.....    | 2a, 12.....               | do.....    | 29.55               | SSW.....                           | W, 11.....  | NW.....                           | W, 11.....                           | W-NW.   |
| City of Joliet, Am.S.S. | Galveston.....   | Havre.....     | 49 50 N.                             | 11 20 W.  | do.....    | 8a, 12.....               | Mar. 10    | 28.84               | WSW.....                           | SW, 3.....  | W.....                            | W, 9.....                            | None.   |
| Exochorda, Am.S.S.      | Malaga.....      | Boston.....    | 36 02 N.                             | 16 03 W.  | Mar. 12    | do.....                   | Mar. 13    | 29.98               | W.....                             | WNW, 9.....   | WNW.....                          | NW, 10.....                          | W-WNW-NW.                                     |
| Sarcosie, Am. S.S.      | Bordeaux.....    | New York.....  | 42 24 N.                             | 17 42 W.  | Mar. 10    | 10a, 12.....              | do.....    | 29.68               | W.....                             | NW, 11.....   | NW.....                           | NW, 11.....                          | SW-NW.  |
| Caledonia, Br.S.S.      | Glasgow.....     | do.....        | 51 13 N.                             | 31 35 W.  | Mar. 13    | 10a, 13.....              | Mar. 14    | 29.36               | W.....                             | WSW, 6.....   | WNW.....                          | WNW, 10.....                         | SW-WSW-W.                                     |
| Steelmaker, Am.S.S.     | Swansea.....     | Portland, Me   | 50 50 N.                             | 22 03 W.  | do.....    | 10p, 13.....              | Mar. 15    | 29.10               | SSW.....                           | WNW, 10.....  | NW.....                           | WNW, 10.....                         | SSW - WNW-NW.                                 |

<sup>1</sup> Position approximate.

<sup>2</sup> Barometer uncorrected.